WHAT IS CLAIMED IS:

1. Process for manufacturing an attenuation device for a signal carried by an optical fiber in the form of a light signal, characterized in that it comprises the following stages:

expansion of the optical core of a first and a second single-mode fiber;

assembly of said first and second fibers facing each other, in a capillary containing a liquid crystal;

polymerization of said liquid crystal, to produce an attenuation element.

2. Process for manufacturing an attenuation device according to claim 1, characterized in that it comprises, after said expansion stage, a stage of:

depositing an electrode over at least one portion of the periphery and over at least one portion of the end of each of said fibers.

3. Process for manufacturing an attenuation device according to claim 1, characterized in that said expansion stage comprises a stage of assembly and fracture of at least two portions of fiber at the end of each of said single-mode fibers.

4. Process for manufacturing an attenuation device according to claim 3, characterized in that said portions of fiber comprise a portion of fiber

with graded index and a portion of fiber in pure silica.

5. Process for manufacturing an attenuation device according to claim 1, characterized in that said liquid crystal is a liquid crystal dispersed in a polymer (PDLC).

6. Process for manufacturing an attenuation device according to claim 5, characterized in that said polymer dispersed liquid crystal is a nematic liquid crystal with negative anisotropy.

7. Process for manufacturing an attenuation device according to claim 1, characterized in that said polymerization stage implements a polymerization of said liquid crystal dispersed in a polymer by ultra-violet radiation.

8. Process for manufacturing an attenuation device according to any one of claims 1 to 7, characterized in that it comprises the following stages:

expansion of the optical core of two fibers by assembly and fracture of a fiber with graded index and of pure silica;

metallization of the periphery and the end of said fibers;

insertion of a first and a second of said fibers facing each other in a capillary containing a liquid crystal;

adjustment of the distance between the ends of said fibers facing each other;

polymerization of said liquid crystal by ultraviolet radiation.

9. Process for manufacturing an attenuation device according to claim 1, characterized in that at least one part of the ends of said fibers facing each other is conductive and substantially transparent.

10. Process for manufacturing an attenuation device according to claim 1, characterized in that a buffer block of step index multimode fiber is added to each of said ends of said first and second fibers facing each other, said block having an external diameter substantially equal to that of said first and second fibers.

11. Process for manufacturing an attenuation device according to claim 1, characterized in that said expansion stage comprises a stage of diffusion of dopants from the optical core of a cleaved single-mode fiber.

12. Process for manufacturing an attenuation device according to claim 1, characterized in that

said single-mode fibers with expanded core are polarization preserving fibers.

13. Process for manufacturing an attenuation device according to claim 1, characterized in that it comprises a stage for inserting means for controlling said attenuation means by an optical field.

14. Attenuation device manufactured according to the process of claim 1.

15. Attenuation device of a signal carried by an optical fiber in the form of a light beam, characterized in that it comprises a first and a second single-mode fiber with expanded optical core assembled facing each other in a capillary containing a liquid crystal forming attenuation means.

16. Attenuation device according to claim 15, characterized in that at least one portion of the periphery and at least one portion of the end of each of said fibers is metallized.

17. Attenuation device according to claim 15, characterized in that the ends of said fibers are obtained by fracture.

18. The attenuation device according to claim 15 implemented in a power limiter which can be controlled by optical power.

19. The attenuation device according to claim 15 implemented in a variable attenuator which can be voltage controlled.

20. The attenuation device according to claim 15, further including at least a second attenuation device for attenuating a signal carried by an optical fiber in the form of a light beam, the second attenuation device being characterized in that it comprises a first and a second single-mode fiber with expanded optical core assembled facing each other in a capillary containing a liquid crystal forming attenuation means, the first and second attenuation devices being further characterised in that the fibers of said at least two attenuation devices are positioned as a strip of fibers.